
# Social Trust and Perceptions of Corruption: An International Comparison

by

João Miguel da Silva Teixeira Fernandes

up201500375@fep.up.pt

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Supervisor:

Professor Manuel Castelo Branco

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## Abstract

Corruption is a current problem embedded in almost all sectors of society. In order to fight it, the causes must be identified and studied. The literature shows that variables such as press freedom, the level of democracy, the level of development, religion, education, and more, of a country influence how corruption is seen and practised. The focus of the dissertation will be on the variable Trust and how it affects not only the perception and experience of corruption themselves but what is the impact of social trust on the gap between these two variables.

The data used to test the hypotheses was withdrawn from several sources for the years 2011 and 2013. Two models were written, one to test the impact of some variables on the gap between the perception and experience of corruption and the other one to test how the perception of corruption is affected by some chosen variables. Panel data for 30 countries and the results were obtained by the method of Ordinary Least Squares with random effects.

The results show a negative and significant relation between trust and the gap of perception and experience of corruption, which means that a country with high levels of trust tends to have a smaller discrepancy between the perceived and experienced levels of corruption. On the other side, despite the fact of trust influencing the gap, it is not relevant when tested only with the perception levels. Finally, the empirical results find that the experience levels of corruption has a substantial effect on the Corruption Perception Index, revealing that countries with high experience levels are likely to have a worse score on such index, which means greater perception levels.

**Key-words:** Corruption, social capital, trust

**JEL codes:** O57; D73

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# 1. Introduction

Over the last decades, corruption has been one of the most discussed themes not only in Portugal but all over the world due to the scandals among the political and economic sectors. For example, Odebrecht and Braskem, Brazil's biggest construction firm and a petrochemical firm respectively, due to bribing officials to secure contracts, will have to pay almost 3 billion euros to the authorities in the United States of America, Brazil and Switzerland (BBC News, 2016). Also in Brazil, Eike Batista, once the richest man in the country, is sought for allegedly transferring over than 14 million euros through offshore accounts to the former governor of Rio de Janeiro, Sérgio Cabral (The New York Times, 2017). Deutsche bank was also fined around 540 million euros by the American and English authorities due to money laundering (The Guardian, 2017a). Juergen Mossack and Ramon Fonseca, founders of Mossack Fonseca, the firm at the centre of the Panama Papers scandal, were arrested as a result of a bribery scandal, also linked with Brazilian companies (The Guardian, 2017b). Rolls-Royce, the engine maker, will pay to the American, English and Brazilian authorities a total amount of 750 million euros, after bribery and corruption claims (Sky News, 2017). The Samsung chief Lee Jae-yong has been interrogated by the prosecutors because of the alleged donations Samsung has given to non-profit foundations in exchange of political support (CNN Money, 2017). Thailand considers to convict officials that are caught in corrupt acts involving amounts above 25 million euros with the death penalty (Independent, 2017) (see more examples on Heidenheimer, 1996; Bowler and Karp, 2004; Morris and Klesner, 2010). These events have changed the trust in institutions and in society as a whole and consequently the behaviour and perception of corruption.

Although it is impossible to perfectly measure it, corruption is one of the main concerns on governments' agenda, so it is fundamental to understand what are the causes and consequences of it, so that corruption can not only be fought but also avoided. Some authors (see examples Serra 2006; Aidt, 2009; Andersson and HeyWood, 2009; Ortiz-Ospina, and Roser, 2016) through their researches found that corruption and development are negative correlated, that is, a country with a low degree of perceived corruption is likely to have a high degree of development. Therefore, as a threat that hinders countries' development and growth, the importance and relevance of additional studies on this topic is justified. Moreover, according to the World Bank (2016), almost 1 trillion euros is paid

each year in bribes, having a multiple effect, harming the economy even more than that amount.

So far, a lot of scholars have analysed the impact of corruption on social trust and others on the inverse relationship. However, few of them have made a clear distinction between perceived and experienced corruption (see examples Olken, 2009; Steves and Teytelboym, 2011). Thus, the present dissertation intends to analyse how social trust and the gap between perception and reality of corruption are related, trying to fulfil the scarce and unclear research about this specific matter which has been considered one of the main economic issues in the literature.

The results show that social trust, perception of corruption and experience of corruption indeed have a relation. Our findings say that the gap between perception and experience of corruption will be lower in societies with high levels of trust. Furthermore, the experienced corruption has a negative effect on the perception levels of corruption, while trust is not relevant when related to the perceived corruption.

The dissertation is organized as follows: Section 2 sets the concepts to understand the main issues related with Social Trust and Corruption and provides the reader a background of corruption. Section 3 introduces the relevant literature and the development of hypotheses. Section 4 starts by presenting the models and the respective methodologies followed by the sample and data. Section 5 shows the empirical evidence and finally section 6 summarizes the results and concludes, offering some recommendations for future researches.

## 2. Background on Corruption

Corruption and trust have a large number of definitions given by various scholars. Hence, before going into the literature review regarding these subjects, it is necessary to define the concepts that are going to be used. Andersson and HeyWood (2009) give a definition of corruption that best fits in this research question: "corruption is the misuse of power in interests of illicit gain" (p. 748). Associated with the concept of corruption, two other notions are of crucial importance to our work: perceived corruption and experienced corruption. These concepts will be the same as the ones used by Steves and Teytelboym (2011). According to these authors, perceived corruption is the idea people have about the frequency of unofficial payments or gifts to a third party, whereas experienced corruption is the direct contact people have with the corrupt behaviour. Social trust is defined as the ´mental model´ of what can be expected when dealing with someone that you do not have personalized information about (Denzau and North, 1994; Uslaner, 2002; Graeff and Svendsen, 2013), and social capital are "the conditions that allow individuals to reap the benefits from interaction cooperatively in a civic community" (Cagala et al., 2016, p. 2).

Corruption is a very old term and its concept comes from the Latin word *rumpere* which means "to break", "break a rule or law" (Graeff and Svendsen, 2013). Scholars have been discussing, first of all, how corruption could be defined. For example, the World Bank (2017) defines a corrupt act such "offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party", while Transparency International (2017) defended that corruption is "the abuse of entrusted power for private gain", very similar to the one proposed by Andersson and HeyWood (2009) and mentioned above. The most common type of corruption studied is bribery[1], since it is easier to measure, even though it is still hard because the corrupt activities are difficult to unmask and some cultural and institutional factors, which have influence on corruption, are not easy to quantify (Goel and Nelson, 2010). Corruption can also be split into two dimensions, grand and petty corruption. Transparency International (2017) defines the former as corrupt behaviour committed by high level officials who twist policies for their own advantage, and the latter as the abuse of power by low-and mid-level bureaucrats with the citizens in need of public goods. Maeda and Ziegfield

[1] See some examples Heidenheimer (1996), Blackburn and Forgues-Puccio (1999), Graeff and Svendsen (2013).

(2013) add that in both cases the most harmed are the socioeconomically disadvantaged: in the petty situation, the poorer do not have the conditions to pay bribes every time they want to access public goods, which tends to be people with low levels of education; in the grand corruption, since government has being deceived by officials or wealthy people, public funds will not be able to be used correctly on programs that benefit the poor. Besides these two dimensions, Brunetti and Weder (2003, p. 1804-1805) went further and differentiated extortive from collusive corruption, where the first means that "the government official has the discretionary power to refuse or delay a service in order to extract a rent from the private agent in the form of a bribe." and in the extortive type "the private agent cooperates in the corrupt act and always pays the bribe.".

Throughout the last decades, both the consequences and the causes of corruption have been on governments' agenda in order to shorten this big development's threat. Some scholars believe that bad governance is causing higher levels of corruption in some countries, since corruption means that resources have been used not in the most efficient way (see Blackburn and Forges-Puccio, 2009; Goel and Nelson, 2010; Graeff and Svendsen, 2013). They defend that, in order to achieve the main goal - getting rid of corruption - first the system itself must be revised since political corruption is one, maybe the biggest, arm of corruption and bureaucrats have been target of political scandals due to corruption, which makes the situation even more urgent to solve (Heidenheimer, 1996). Albeit the causes are not clear, Goel and Nelson (2010) blame decentralization of power as one possible factor for political corruption, saying that the greater the level of decentralization, the higher the probability of a bribe might occur and more complicated it becomes to identify such act. Shleifer and Vishny (1993) and Blackburn and Forges-Puccio (2009) go a little further and study the organisation of corruption taking the corrupt bureaucrats as a given, regarding the position of one who may need complementary services given by different bureaucrats. They affirm that, in case of disorganisation, each one will maximize his bribe, bringing negative externalities to the other bureaucrats, since the individual in need of the services will have a bigger amount of bribes paid, but if bureaucrats act jointly, the total amount of bribe paid would be lower, decreasing the probability of being detected and being less harmful for the country's growth.[2]

Officials have incentives to keep acting in a corrupt manner until the benefits of doing so outweigh the possible consequences of being caught, that is, as long as there are

[2] Additional evidence of this theory can also be found in Campos et al. (1999); Rock and Bonnet (2004); Graeff and Svendsen (2013).

opportunities to misuse the power to own benefit at a little cost, corruption will always be a current evil within the society (Andersson and HeyWood, 2009) due to the almost non-existent explicit standards of performance which make officials with more freedom of acts (Brunetti and Weder, 2003). Authors support that strict regulations imposed by the governments in order to get the approval of bureaucrats for any license, permits or certificates, the so called "red tape", might force one to find a faster, easier and, mainly, cheaper way to obtain what s/he needs, creating those referred opportunities for the corrupt behaviour (Huntington, 1968; Leff, 1964; Leys, 1965; La Porta et al., 1999). Goel and Nelson (2010) accept this theory, but they also argue that the restricting policies can also be a weapon against corruption, since the monitoring is tighter. With a different point of view regarding this subject, Aidt (2009) sees corruption as a facilitator of business, since it creates opportunities that would not happen otherwise. The author argues that the creation of such openings is due to the inefficiency of the government procedures, explaining the "speed-money" case, which consists in paying a bribe to speed up bureaucratic procedures.

A deterrent to corruption might be the media. Nowadays, newspapers and local radios, for instance, spread the information towards all the population. Ferraz and Finan (2008) show that, with this access to information, politicians acting corrupt will be punished faster at places with free media, decreasing their likelihood for re-election. Hence, since it unveils the bad ones, the good policy makers will gain voters, which, in normal situations, is good for the country development (also supported by Chowdhury, 2004). The media are also an important mechanism to fight collusive and extortive corruption. In case of a bureaucrat's behaviour being exposed by a victim to the media, he would have a higher probability of being punished and therefore lose his credibility. On the other hand, if collusion exists, neither the bureaucrat nor the private agent will report the situation and this is where an independent media is fundamental to detect and denounce such cases (Brunetti and Weder, 2003).

Access to information is linked to transparency, a concept often confused with corruption but completely different. Even though different, they are correlated, as a society with poor transparency policies is likely to have high levels of corruption. Regarding this matter, Kolstad and Wiig (2009) found some interesting evidences, showing that despite the fact of being correlated, transparency itself is not enough to have a direct impact on corruption, needing some complementary policies, although in some situations its effect on corruption might be ambiguous (Bac, 2001).

Besides all of this, there are also other cultural factors causing corruption that make scholars believe government not to be the main responsible. According to Pena López and Sánchez Santos (2013, p. 697), "the study of corruption requires a multidisciplinary approach as it cannot be isolated from the social environments in which it arises". These authors used the Hofstede's cultural dimensions to study the influence of culture on corruption, concluding that an individualistic culture with feminism trend, lower gap between superiors and subordinates and little risk averse presents inferior levels of corruption. Moreover, factors such as history, legal system, and religion have been accused of shaping corruption in different ways in each country. About the historical factor, Goel and Nelson (2010) found it really important to understand how corruption has been shaped and what is or is not acceptable by the society which can differentiate often. For instance, it is expected of democratic institutions to be anti-corruption, therefore, with a lower level of acceptance of the corrupt practices (Moreno, 2002). Regarding this topic, Serra (2006, p. 226) goes further and says that more important than the level of democracy is "whether a country has maintained democratic institutions for a long continuous time". Furthermore, Kaufmann and Siegelbaum (1997) defend that new countries are more likely to suffer corruption due to the lack of supervision and government mechanisms which opens doors for bribe-giving and bribe-taking, and Moreno (2002) supports the idea that new democratic countries may suffer from their old regimes with the reputation of corrupt regimes, so citizens still think that corruption is not gone. Treisman (2000) analysed also how the colonial heritage could change or form the levels of corruption. Hence, he reached the conclusion that British colonies are the ones with best performances in terms of avoiding corruption inside their systems. The reason for such good behaviour is their legal system, which works through precedents rather than precise codes, giving narrow authority to judges who, in this way, do not have incentives to misuse their power (Goel and Nelson, 2010, also support this theory).

Religion also has its own share of guilty shaping corruption. Protestants show a lower perceived corruption, outperforming the other major religions such as Islam, Catholicism and the Anglican Church (Lipset and Lenz, 2000). Treisman (2000) tried to understand why this happens, giving some possible reasons: first, since Protestantism does not have a tight connection with the system, is more likely to uncover and punish bureaucrats' corrupt behaviour; second, Protestants might not be as tolerant as, for

instance, Christians, regarding forgiveness[3], and finally, the strong relationship one has with their family in other traditions other than Protestantism might lead to lower corruption in the latter.

Lastly, an additional factor that influences corruption is the level of openness of economies, in other words, the more open a country is in terms of financial integration, the less corrupt it tends to be (Neeman et al., 2008). On the other hand, Treisman (2000) refers to studies made by Ades and Di Tella (1996, 1999), saying that the openness a country has to foreign trade is negatively related with the level of corruption, and countries that own valuable natural resources are more likely to have higher levels of corruption, since the owners of such resources are in a position to use their power for illicit practises, so one way to get rid of this problem would be to increase the competition in the markets, decreasing the profits of such bribes.

So far, the reviewed literature speaks of the general concept of corruption, although, as explained before, some authors focused more in the perceived corruption instead, as they claim corruption itself is almost impossible to measure, so that there is a need of a better approximation to do so[4]. Andersson and HeyWood (2009), for instance, consider that perceptions might influence behaviour, in such way that if one believes that everyone around them is corrupt; there will be a higher probability that they also commit corruption. These authors use the Corruption Perceptions Index (CPI) created by the Transparency International (TI) back in 1995, an annual index that reports how countries (168 currently) have been performing in terms of fighting corruption at the macro level (De William, 2008). This index inquires business people, academics and risk analysts about how they perceive the level of corruption in their countries (Chowdhury, 2004; Andersson and HeyWood, 2009). These studies, Andersson and HeyWood (2009) and De William (2008), explain in a detailed way what the CPI is, why it is the best indicator nowadays and how CPI has influenced the overall economics. CPI is said to be the best due to three reasons: it was the first to make a big effort compiling several factors, this way creating a reliable and complex measure of perceived corruption; second, for the Transparency International creating the index was not enough, the institution have been

[3] Lipset and Lenz (2000, p. 120) gives us a more technical explanation about this: "Protestants, particularly sectarians, believe that individuals are personally responsible for avoiding sin, whereas other Christian denominations, particularly the Catholic Church, place more emphasis on the inherent weakness of human beings, their inability to escape sin and error, and the need for the church to be forgiving and protecting.".

[4] Nevertheless, Maeda and Ziegfield (2013, p. 5) argue that studies using perception of corruption must keep in mind that individuals from different social level might have distinct points of view in this matter: "the affluent and educated will systematically perceive less corruption than the poor and poorly educated".

linked to anti-corruption initiatives, which have made it go hand-in-hand with the words "perceived corruption"; and finally, the vast list of non-governmental organizations that work with TI, make it a strong and almost non contested monopolist in this field (Andersson and HeyWood, 2009).

CPI has such a strong influence on politics that a low score may represent a fall in the government, since a poor performance might mean that the best policies to fight corruption are not being executed so a change is needed (e.g. where this happened: Pakistan, Bolivia, Cameroon and Nigeria, from Galtung, 2005). Another example of this influence is the fact that the US's foreign agency "Millennium Challenge Corporation" (MCC), which gives aid to fight global poverty, has as one of the selection factors the performance of the country on the CPI (Millennium Challenge Corporation, 2017). Regarding this, if CPI might be an exclusion factor for poorer countries in need of help whose scores are not worthy of such trust, more inequality will result from this (Jens Andvig, 2005), inducing these countries to a so called "corruption trap", since the countries do not have the kind of help needed to implement policies that would fight corruption, thus making it impossible for a development exist due to the degree of corruption embedded in society (Andersson and HeyWood, 2009). According to De William (2008), this pressure imposed by aid agencies to perform in terms of corruption policies might have a non-desirable effect since governments, in order to reach the expected results, see themselves obligated to deviate their focus from policies maybe more important, for instance public health, to policies focusing on corruption.

## 3. Relevant Literature and Hypotheses

Focusing now on the literature of the other part on my dissertation, social trust, which differs from the personalized trust in the extent that with the social trust we assume that we do not know the third party that we are dealing with, while personalized trust refers to someone we have personal knowledge of enough to know how s/he behaves (definitions from Denzau and North, 1994; Uslaner, 2002; Graeff and Svendsen, 2013). Due to the difficulty in measuring social capital, social trust is the most adequate concept to do it, since trusting in the unknown facilitates the existence of a civic community, building this way social capital (Paldam and Svendsen, 2000). According to La Porta et al. (1997), trust is fundamental especially in large organizations, such as, for instance, governments, since bureaucrats do not see each other often, which would help making the system more effective. There is a disagreement about whether participation in civic groups like voluntary, scouting or sports associations creates social trust rather than social capital (Putnam, 1993) or only people with already high levels of social trust participate in such organizations (e.g. Uslaner, 2002). Rothstein and Eek (2009) found social trust an important topic since it is positively related with some required conditions, not only social but political and economical too and this theory was a few years earlier supported by Delhey and Newton (2003) saying that a country would face economic growth if its levels of social trust were high, going against Graeff and Svendsen (2013) who concluded in their study that "the level of social trust does not have a significant impact on the level of economic development but it can contribute to wealth improvements indirectly by reducing the spread of corruption." (p. 2843).

This quote works as a starting point to introduce the different contributions to the literature that studies the relation between social trust and corruption, which are seen as examples of social capital, positive and negative, respectively (Steves and Teytelboym, 2011). Literature has studied either the impact of (social) trust in the level of corruption within a society or how corrupt behaviour affects people's trust on social institutions. Some authors affirm that higher levels of corruption in the political sector lead to low levels of social trust, since people often take the behaviour of the officials as an indicator of what is expected from a normal citizen (McCann and Domínguez, 1998; Bowler and Karp, 2004; Rothstein and Eek, 2009) while Moreno (2002), in his empiric study, concludes that the majority of individuals see the assignment of a public office to someone increasing the likelihood of such individual turning out to be corrupt.

Furthermore, Banarjee (2016) also found that corruption negatively affects trust because it means violation of the norms which has a negative impact on the belief about others' trustworthiness. However, Rothstein (2000) shows us a different approach to this topic where corrupt bureaucrats would be willing to stop acting corrupt if they could be convinced that their colleagues had the same will. In case that someone acts corrupt, one will have to respond for his/her own acts in court and the profits from such act cannot be shared with the police or judges so one will be punished and realize that corrupt behaviour is not worth it, bridging this way social capital. This theory was developed by Graeff and Svendsen (2013) in order to prove that high quality institutions build trust among citizens, leading to lower levels of corruption. This relation sets the first hypothesis:

- **[H1]** The perception of corruption is higher where the level of trust is lower.

Regarding this relation, Bjørnskov (2013) says that greater levels of trust (social capital) decrease corruption since bribery would not be so likely to happen, that is, one is less likely to either accept or attempt to bribe. Though, other theories support that low levels of trust can make corruption thrive due to the difficulty of agents building cooperative mind-sets (e.g. La Porta et al., 1997; Moreno, 2002). For the corrupt countries, not only are their resources not invested in the optimal way, but lower levels of trust also increase the transaction costs Graeff and Svendsen (2013).

As far as the author is aware, the only study that has examined the relation between the social trust and the gap between perceived and experienced corruption is Steves and Teytelboym (2011). The results of their analysis are interesting: among the countries used in the study, the ones that show higher levels of experience of corruption are also the ones with greatest differences between perceived and experienced corruption. This can be explained by the fact that in some countries, unofficial payments, for instance, are seen as a sign of gratitude, this is, such payments are voluntary and not seen as corruption.

Moreover, they found that perceived corruption has a negative relation with social trust and this might be due to trust in public institutions being somehow set by the perception of corruption of citizens in those same institutions, which can lead to a bigger gap between perceived and experience corruption. The purpose of the dissertation is to extend this type of analysis to a broader set of countries and include in it the influence of a broader set of variables.

Based on the above, three more hypotheses will be tested:

- **[H2]** The perception of corruption increase when there is a high level of the experienced corruption.
- **[H3]** The gap between the perception and experience of corruption decreases with high levels of trust.

# 4. Methodology

## 4.1 Models

Regarding the methodology, in order to test the 3 hypothesis previously presented, this study will use two different models. In the first model, the aim is to test how the difference between perception and experience of corruption is affected by some variables

$$Dif_{is} - ExpCorr_{is} = \beta_0 + \beta_1 Trust_i + \beta_2 PressFreedom_i + \beta_3 Levelof Developement_i + \beta_4 DemocracyIndex_i + \varepsilon \quad \textbf{(1)}$$

In this first model, the dependent variable -$Dif_{is}$ - is the difference between the perceived corruption and the real experienced corruption in a country *i* on the *s* sector, which will be three: education system, judiciary and the police. To measure it was used the Global Corruption Barometer, from Transparency International that has a direct way of measuring corruption, asking people, every year, all around the world how many times have they done or participated in a corrupt act.

The explanatory variable - $Trust$ - is the level of social trust in the country and is the variable with the most interest. The information was taken from the 6th wave of surveys of the World Values Survey which tries to understand the variations in the beliefs, values and motivations of people throughout the world every four years (the question used was: "would you say that most people can be trusted or that you need to be very careful in dealing with people?").

The first control variable - $PressFreedom$ - represents the level of press freedom embedded in a country. Reporters Without Borders (RSF) is a French NGO that defends press freedom and every year estimates the level of such freedom for a wide range of countries, making a ranking (the first in the ranking represents the country with the highest level of press freedom) (Reporters Without Borders, 2016) . The second control variable - $Levelof Democracy$ - is withdrawn from the Economist Intelligence Unit's research, which through sixty indicators measures the ranking of the level of democracy, where 0 represents an authoritarian regime and 10 a full democracy regime (Economist Intelligence Unit, 2017). The last variable will be a dummy variable that will show the level of development of a country (developed=1 and developing=0) according to the

United Nations and the Department of Economic and Social Affairs (Department of Economic and Social Affairs, 2017).

The second model will show the relation between social trust and experienced corruption with the perceived corruption of a country:

$$Perc_i = \beta_0 + \beta_1 Exp_i + \beta_2 Trust_i + \beta_3 PressFreedom_i + \beta_4 LevelofDevelopement_i + \beta_5 DemocracyIndex_i + \varepsilon \quad \textbf{(2)}$$

In this model, the score of a country *i* on the Corruption Perception Index (CPI) will be set as dependent variable – $Perc_i$ - and such index is made by the Transparency International annually. This index includes 176 countries, where the scores go from 0 to 100, the better performances in terms of fighting corruption being at the top of the table.

The first explanatory variable – $Exp$ – consists in the percentage of people who said that they paid a bribe to any service in the last year. The difference between these two variables and the ones from the first model is that these ones show the aggregate values; that is, not just a sector, but in general. The variable of trust is exactly the same of the previous model. The remaining variables are the same as those used in the previous model.

### 4.2 Sample and Data

In order to estimate the models presented in the previous section, information regarding corruption, social trust, press freedom and democracy level of countries were gathered.

In terms of corruption, Transparency International gives us a great data of wide range of countries. The CPI displays the scores of 176 countries in the most recent report and the Global Corruption Barometer surveyed over than 135 thousand people to study the experience of corruption around the world. Trust is the variable with the least data available. World Values Survey gives us, on its last wave of surveys, information about 57 countries and over than 85 thousand people's beliefs, values and motivations. Every year is computed The Economist Intelligence Unit's Democracy Index, characterizing the regime in one of these four forms: authoritarian or hybrid regime or flawed or full democracy, giving us a score from 0 to 10 of such characterization. In terms of press, RSF

has been publishing since 2002 an index with the ranking of each country, counting in its last report with 180 countries[5].

Due to the lack of some countries' information, gathering all the information available to all the variables, the final sample is composed by 30 countries (the list can be seen in Appendix 1) and the answers gathered in 2001 and 20013 will be used. Panel data will be used.

**Table 1 – Descriptive Statistics of the Dependent, Independent and Control Variables of the Model 1**

| VARIABLES | N | mean | p25 | p50 | p90 | sd | min | max |
|---|---|---|---|---|---|---|---|---|
| Trust | 30 | 20.41 | 8.800 | 17.80 | 37.20 | 13.61 | 3.200 | 55.30 |
| PressFreedom2013 | 30 | 96.87 | 47 | 110 | 156.5 | 51.85 | 8 | 169 |
| PressFreedom2011 | 30 | 96.50 | 46 | 115.5 | 151.5 | 49.94 | 13 | 171 |
| DemocracyIndex2011 | 30 | 6.140 | 4.550 | 6.545 | 8.095 | 1.855 | 2.570 | 9.260 |
| DemocracyIndex2013 | 30 | 6.239 | 4.640 | 6.515 | 8.095 | 1.827 | 2.670 | 9.260 |
| Levelofdevelopment | 30 | 0.233 | 0 | 0 | 1 | 0.430 | 0 | 1 |
| Difeduc2011 | 29 | 0.248 | 0.164 | 0.243 | 0.480 | 0.144 | -0.0720 | 0.631 |
| Difjud2011 | 29 | 0.307 | 0.171 | 0.303 | 0.556 | 0.187 | -0.229 | 0.587 |
| Difpol2011 | 29 | 0.297 | 0.227 | 0.335 | 0.517 | 0.164 | -0.236 | 0.578 |
| Difeduc2013 | 30 | -0.0637 | -0.210 | -0.0600 | 0.205 | 0.207 | -0.480 | 0.410 |
| Difjud2013 | 30 | 0.390 | 0.300 | 0.405 | 0.655 | 0.196 | -0.0700 | 0.780 |
| Difpol2013 | 30 | 0.360 | 0.220 | 0.340 | 0.620 | 0.215 | -0.0700 | 0.710 |

**Note**. s.d.: standard-deviation; p25: percentile 25; p50: percentile 50; p75: percentile 75; p99: percentile 99. The number of observations is 30 for all the variables except in 2011 where there is no data for Morocco.

Regarding the variables of the first model, on the surveys made in the last World Values Surveys' wave, taking into account the model's sample, the mean of the people who considered the others trustworthy is of 20%, where the highest value was 55.3%. It should be noted that the level of press freedom of the chosen sample is low in the both years, since the percentile 50 has the value of 110 in 2013 and 115 in 2011, in a sample where the lowest value is 8 and 13, respectively in each year. The levels of democracy

[5] We used the ranking of the countries in such index following the example of Blanc et al. (2017).

taken in 2011 and 2013 stay still practically at the same levels, as both checked a mean of 6 in a scale of 0 to 10.

Analysing now the dependent variables, the percentile 50 of the differences between the perception and the experience of corruption on the sector of the education went from a positive value in 2011 to a negative value in 2013, 0.24 to -0.06 respectively. This means that either the mentality or the experience of the society changed, since the majority had a perception of corruption higher than the experience in 2011, and in 2013 the records say exactly the opposite. On the judiciary's sector the values remain constant on both years, where more than the majority has the idea that the quantity of bribes that are made are higher than what they actually experience. For the police sector, the mean recorded in 2011 is 0.297 and two years later it increased to 0.360.

**Table 2 – Descriptive Statistics of the Dependent and Independent Variables of the Model 2**

| VARIABLES | N | mean | p25 | p50 | p90 | sd | min | max |
|---|---|---|---|---|---|---|---|---|
| CPI2013 | 30 | 45.17 | 34 | 40 | 73.50 | 19.00 | 16 | 91 |
| Barometer2013 | 30 | 0.248 | 0.0700 | 0.190 | 0.540 | 0.203 | 0.0100 | 0.740 |
| CPI2011 | 30 | 43.14 | 26.44 | 35.29 | 76.27 | 21.04 | 18.04 | 94.63 |
| Barometer2011 | 30 | 0.279 | 0.0898 | 0.235 | 0.563 | 0.201 | 0.0242 | 0.657 |

**Note**. s.d.: standard-deviation; p25: percentile 25; p50: percentile 50; p75: percentile 75; p99: percentile 99.

On the second model, the variable trust has exactly the same descriptive statistics as the first model since the sample of it is the same. Regarding the dependent variables, both the CPI2011 and CPI2013 have not just the mean below 50 but also the percentile 50 which means that the majority of the countries had a poor performance fighting corruption (Iraq is the worst with a score of 16 in 2013 and 18 in 2011 and New Zealand the best one, scoring 91 and 94 in 2013 and 2011 respectively). In terms of experienced corruption, the country that experienced the most bribery was Yemen with 65.7% and 74% of people saying that they already paid illegally at any service in 2011 and 2013, respectively. The mean of this variable is 0.279 in 2011 and 0.248 in 2013.

The rest of the variables are the same ones used on the first model, so the descriptive statistics are the same.

In the models it is going to be used the aggregate data, this is, 2011 and 2013 will be put together, creating this way panel data. The aggregated descriptive statistics can be found at the Appendix 2 and 3.

## 5. Empirical Results

This section discusses the results of the previously depicted models. To this purpose, we estimated Ordinary Least Squares fitted to panel data. This model allows for estimating the linear impact of the several explanatory variables on the dependent variable that follows a continuous distribution. Residual-versus-fitted plots of simple OLS estimates show heteroskedascity in residuals. As such, all model estimates bellow include clustered standard errors that are robust to these spherical errors (Cameron and Miller, 2015). All model specifications use random effects. Fixed effects are not included for several theoretical and statistical reasons. First, there are no theoretically relevant reasons to expect country-specific unobserved heterogeneity. Second, there are some theoretically relevant variables, such as trust and level of development, that do not vary within clusters. Adding fixed effect would omit them from the model. Third, the sample only includes 60 observations with 30 clusters. Adding fixed effects greatly reduces degrees of freedom, and may lead to potential problems with overfitting.

**Table 3 – Random Effects Model**

| VARIABLES | Education | Police | Judicial |
|---|---|---|---|
| Trust | -0.11 | -0.50** | -0.88*** |
| | (0.19) | (0.20) | (0.19) |
| Press Freedom | -0.05 | -0.01 | -0.14** |
| | (0.08) | (0.07) | (0.06) |
| Democracy Index | -0.45 | 2.78* | 0.72 |
| | (2.08) | (1.67) | (1.81) |
| Level of development | -0.75 | -3.34 | -3.87 |
| | (10.09) | (6.94) | (3.97) |
| Observations | 59 | 59 | 59 |
| Number of Country_Num | 30 | 30 | 30 |
| RMSE | 11.47 | 18.25 | 12.62 |

**Note:** Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. RMSE: root mean square error. All models contain constants. Source: Own computations.

The table 3 gives us the estimated results for the first model on the three sectors. As it was expected, trust has a negative effect on the gap between perception and experience of corruption. This result confirms the findings of literature and our [H3],

which says that countries with high levels of social trust tend to have the levels of perceptions closer to what is their experience of corruption, is accepted only for the police and judicial sector and not for the education one. This gap will be smaller in the judicial sector, and the results show that, under the linearity assumption, a unit increase in trust is associated with a 0.88 unit decrease in the gap between perception and experience of corruption, *ceteris paribus*, while on the police sector this value goes down to 0.5. Although the strength and direction of this variable are constant through the sectors, only on the judicial and police sectors trust is statistically significant, for a significance level of 1% and 5%, respectively.

The first control variable also follows the same effect of trust, tough in a reduced dimension. In the literature it is defended that press freedom helps to fight corruption in a way that it would make it easier to denounce corrupt acts, and the coefficients estimated prove this point of view. Only in the judicial sector this variable seems to be significant for a level of 5%, saying that a rank up on the press freedom index, will make the gap between perception and corruption 0.14 smaller, *ceteris paribus*.

The higher the level of democracy, the stronger should be the politics' anti-corruption. Moreno (2002) is one of the supporters of this theory and the results show quite the opposite because on the police sector, the only sector where the variable is significant at the 90% interval confidence, the level of democracy has a positive relation with the gap between corruption and experience of corruption. On such sector, a country that observes an increase of 1 level on the democracy level will have an increase of 2.78 on the gap between the perceived and the experienced corruption.

The last control variable is the level of development, and though its estimators follow the pattern presented on the literature, that is, a country more developed tends to have a lower corruption, this variable is not statistically significant for any model.

In order to test the multicollinearity, we used the test of the variance inflation factor (VIF). Thus, a VIF higher than 10 means the existence of collinearity. Analysing the results, which can be seen at the Appendix 4, none of the variables surpass such limit, meaning that there is not a problem of multicollinearity (this applies for this and the following models presented and the results are on the same Appendix).

In order to take into account the external shocks, in the second analysis we proceed to the inclusion of a temporal dummy.

**Table 4 – Random Effects with Temporal Dummy**

| VARIABLES | Education | Police | Judicial |
|---|---|---|---|
| Trust | -0.14 | -0.50** | -0.88*** |
| | (0.19) | (0.20) | (0.19) |
| Press Freedom | -0.01 | -0.02 | -0.15** |
| | (0.09) | (0.07) | (0.06) |
| Democracy Index | 0.16 | 2.69 | 0.56 |
| | (2.19) | (1.66) | (1.81) |
| Level of development | 0.68 | -3.36 | -3.83 |
| | (10.52) | (6.93) | (4.19) |
| Observations | 59 | 59 | 59 |
| Number of Country_Num | 30 | 30 | 30 |
| RMSE | 11.47 | 18.25 | 12.62 |

**Note:** Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. RMSE: root mean square error. All models contain constants. Source: Own computations.

Observing the table 4, we conclude that the results are quite similar to the previous ones. The most notable difference is the loss of significance for the model of the democracy index variable on the police sector. The rest of the estimates keep the same signal effect, coefficients and significance.

In a way of assessing the importance/relevance of the inclusion of the temporary variation associated with external shocks we use the *testparm* that gave us p-values of 0.00, 0.01 and 0.18, on the education, police and judicial sectors, respectively. These values mean that the null hypothesis of non-existing segregated effects through time is rejected for the education and police sectors, making the model efficient and confirming that time has an effect on the dependent variable.

Following the same method of the first model, the table 5 displays the estimations regarding the regression of the CPI variable. In the first column it is shown the OLS model with random effects and in the second column is added the temporal dummy (CPI Time).

**Table 5 – Regressions of the Second Model**

| VARIABLES | CPI | CPI Time |
|---|---|---|
| Trust | 0.25 | 0.25 |
| | (0.16) | (0.17) |

| | | |
|---|---|---|
| Barometer | -0.11** | -0.09* |
| | (0.06) | (0.05) |
| Press Freedom | -0.05 | -0.05 |
| | (0.07) | (0.05) |
| Democracy Index | 4.52*** | 4.28*** |
| | (1.36) | (1.47) |
| Level of development | 10.80 | 11.58 |
| | (7.15) | (7.27) |
| | | |
| Observations | 60 | 60 |
| Number of Country_Num | 30 | 30 |
| RMSE | 3.63 | 3.63 |

**Note:** Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. RMSE: root mean square error. All models contain constants. Source: Own computations.

As happened previously, these two estimations do not have many differences. Our [H1] and [H2] can be answered by interpreting these results. Contradicting the first model and the [H1], the variable trust is not statistically relevant to explain the variation of the perception levels, which goes in contradiction of what we were expecting. Thus, we can conclude that trust is important analysing the gap between the perception and experienced corruption but not on the perceived corruption itself.

This also occurred for the variables: press freedom and level of development. These two do not have significance for the model. Just to note that, even though press freedom is not significant, its coefficient has a signal, negative, worth of interpretation and discussion. This could be interpreted in a way that, a country with high level of press freedom are more likely to publish news of bribery cases and consequently might lead to an increase of the perception of corruption within the society, which differs a bit of what was cited on the literature review.

The democracy index presents notable significance on the dependent variable at the 99% interval confidence. In this model the signal effect is more linked with the literature review than the results of the previous model. Countries with more democratic institutions should be more pro-active on fighting corruption, leading this way to a society with lower perception levels of corruption, which is confirmed by the 4.52 coefficient, estimating that an increase of 1 value on the democracy index, will decrease the CPI on 4.52, *ceteris paribus.*

At last, linked to one of the hypotheses, [H2], the variable barometer, the experience of corruption, has a positive impact on the perception of corruption. This result

follows the idea that "if I act corrupt, everyone acts corrupt", so a society that increases 1% of its experienced corruption on any service, will decrease its CPI score in 11%, *ceteris paribus*. This variable is significant for the model for a significance level of 5%.

At first, the model contained an additional variable that measured the simultaneous effect of trust and experience of corruption. This interaction had the objective of checking whether a country with a given level of trust would have a bigger or smaller effect of the experienced corruption on the perception levels and vice-versa. Since the results (Appendix 5) show that the interaction term would not be significant for the model and it would worsen the effects of the remaining variables, we decided to let the interaction out of the empirical results.

Concluding the discussion of the results and trying to understand the failed results on the trust variable, we looked for the possibility of outliers on the sample and after some try-outs we reached some interesting findings. Leaving the American countries out of the sample, not only did the model remain significant, but the trust variable also became significant for the model, at the significance level of 10%. Table 6 shows the results presented.

**Table 6 – Results without American Countries**

| VARIABLES | CPI |
|---|---|
| Trust | 0.28* |
| | (0.17) |
| Barometer | -0.14** |
| | (0.06) |
| Press Freedom | -0.06 |
| | (0.05) |
| Democracy Index | 4.08*** |
| | (1.39) |
| Level of development | 8.88 |
| | (7.04) |
| Observations | 48 |
| Number of Country_Num | 24 |
| RMSE | 3.63 |

**Note:** Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. RMSE: root mean square error. All models contain constants. Source: Own computations.

## 6. Conclusions

Corruption has been and it will always be an important economic matter. Scholars started to discuss this topic but the data was almost nonexistence. More recently, as this issue gained more attention, organizations have started to focus on this problem and used their resources to create databases. Such information made researchers able to develop new theories and reach new findings. Due to the difficulties of measuring corruption, the perception of it was the proxy chosen to study the cause-effect relation with a lot of variables.

The objective of this research is to find a possible relation between social trust and the gap between perception and experience of corruption. Reviewing the literature, this relation is still a question without an answer. Therefore, the hypotheses were set where, firstly, was stated that trust would have a positive effect on the gap between the perception and experience of corruption, that is, the gap would be smaller. Instead of using the aggregated perceived and experienced corruption, we decided to use the specific values of certain sectors to have a more detailed result.

Our findings indicated that social trust has, indeed, a positive effect but only on two out of the three sectors used. On the police and judicial sector, the trust seems to be an important feature in order to people have a level of perception of corruption closer of what is the reality of it. The data shows us that almost all countries have a perception level higher that the experience, which means that people have the idea that the others act more corrupt than they actually do and this empirical evidence states that one of the reasons for it is that people do not trust enough others.

With the purpose of validating this thought, we also tested if trust would influence the perception of corruption itself. Actually, the results deny the last assumption, saying that the perception levels are not influenced significantly by trust, so maybe the individuals' experience is the one influenced by the trust levels, leading to one act less corrupt if he starts to trust more. Although the hypothesis was contradicted, another result linked to it deserves to be highlighted: removing the American countries out of the sample, the theory becomes true, that is, trust turns out to be relevant, which makes the assumption correct again.

The last conjecture had the goal of putting the experience and perception of corruption face to face, stating that higher levels of experienced corruption would lead to a greater perception of it. The conclusions are the expected: an individual who acts corrupt

tend to believe that the rest of the society has the same behavior as him. This might be an explanation for the countries with high levels of perception: if perception levels are high it can be caused by the actual existence of a great number of corrupt acts within the society.

In our empirical research some limitations made it more difficult to obtain better and more solid results: the lack of data available was the main reason for the reduced sample because the variable trust has statistics for a low number of countries, which made it impossible to add more control variables to the models; the data about experience corruption is still questionable since it is the hardest variable to measure due to all the implications of the gathering process; also, some variables have changed the way how its sources gather the information about them, making the comparison of data through the years harder and, finally, the causality of the variables for the relation trust-perception; only one way of causality was tested, and not the other way around.

Despite all the limitations, our findings gave the literature a launching ramp to develop and create new studies about this research question, since we have reached interesting results, ones worthy of further expansion in a matter as current and important the economics and the society as a whole.

For future researches our main suggestions are deeper studies on the theoretical reason for the American countries being outliers and the fact that social trust is not significant on the gap between the perception and experience of corruption on the education sector. Moreover, a wider database will be crucial, since it would allow adding more variables and this way reaching more viable results. Along this, testing a broader range of causalities will help to understand how variables really are linked to each other better.

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# Appendixes

## Appendix 1 – List of Countries

| | | | | | |
|---|---|---|---|---|---|
| Argentina | Georgia | Malaysia | Pakistan | Slovenia | Turkey |
| Armenia | Ghana | Mexico | Peru | South Africa | Ukraine |
| Australia | India | Morocco | Philippines | Spain | United States |
| Chile | Iraq | New Zealand | Romania | Taiwan | Yemen |
| Colombia | Japan | Nigeria | Rwanda | Thailand | Zimbabwe |

**Appendix 2 – Descriptive Statistics of the Aggregated Data of the Model 1**

| VARIABLES | N | mean | p25 | p50 | p90 | sd | min | max |
|---|---|---|---|---|---|---|---|---|
| Trust | 60 | 20.41 | 8.80 | 17.80 | 37.20 | 13.49 | 3.200 | 55.30 |
| PressFreedom | 60 | 96.68 | 46.50 | 115 | 153.5 | 50.47 | 8 | 171 |
| DemocracyIndex | 60 | 6.19 | 4.60 | 6.54 | 8.10 | 1.87 | 2.570 | 9.26 |
| Levelofdevelopment | 60 | 0.23 | 0 | 0 | 1 | 0.48 | 0 | 1 |
| DifEduc | 59 | 8.95 | -7 | 12 | 33.40 | 23.68 | -48 | 63.10 |
| DifJud | 59 | 34.92 | 23.70 | 35 | 58 | 19.46 | -22.90 | 78 |
| DifMed | 30 | -17.27 | -25 | -14.50 | 15.50 | 25.11 | -82 | 21 |
| DifPol | 59 | 32.91 | 22 | 33.70 | 60 | 19.28 | -23.60 | 71 |

**Appendix 3 – Descriptive Statistics of the Aggregated Data of the Model 2**

| VARIABLES | N | mean | p25 | p50 | p90 | sd | min | max |
|---|---|---|---|---|---|---|---|---|
| CPI | 60 | 44.16 | 29.83 | 37.50 | 73.50 | 19.90 | 16 | 94.63 |
| Barometer | 60 | 26.35 | 8.025 | 22.01 | 55.30 | 20.09 | 1 | 74 |
| Trust | 60 | 20.41 | 8.800 | 17.80 | 37.20 | 13.49 | 3.200 | 55.30 |
| PressFreedom | 60 | 96.68 | 46.50 | 115 | 153.5 | 50.47 | 8 | 171 |
| DemocracyIndex | 60 | 6.189 | 4.595 | 6.540 | 8.095 | 1.826 | 2.570 | 9.260 |
| Levelofdevelopment | 60 | 0.233 | 0 | 0 | 1 | 0.427 | 0 | 1 |

**Appendix 4 – VIF tests for both models**

| VIF test Model 1 | |
|---|---|
| **Variables** | **RE** |
| DemocracyIndex | 7.22 |
| Trust | 4.43 |
| PressFreedom | 4.07 |
| Levelofdevelopment | 2.94 |

| VIF test Model 2 | |
|---|---|
| **Variables** | **RE** |
| DemocracyIndex | 7.22 |
| Trust | 4.83 |
| PressFreedom | 5.69 |
| Levelofdevelopment | 3.11 |
| Barometer | 3.88 |

**Appendix 5 – Results of the inclusion of the Interaction term**

| VARIABLES | CPI Interaction |
|---|---|
| Trust | 0.31 |
| | (0.19) |
| Barometer | -0.06 |
| | (0.12) |
| c.Trust#c.Barometer | -0.002 |
| | (0.004) |
| Press Freedom | -0.04 |
| | (0.05) |
| Democracy Index | 4.46*** |
| | (1.38) |
| Level of development | 10.28 |
| | (7.00) |
| Observations | 60 |
| Number of Country_Num | 30 |
| RMSE | 3.41 |

**Note:** Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. RMSE: root mean square error. All models contain constants. Source: Own computations.